

| AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT | | 1. CONTRACT ID CODE | PAGE OF PAGES |
|---|---|---|--|
| 2. AMENDMENT/MODIFICATION NO. PR-NC-03-10014/0001 | 3. EFFECTIVE DATE 02/21/03 | 4. REQUISITION/PURCHASE REQ. NO. PR-NC-03-10014 | 5. PROJECT NO. (If applicable) |
| 6. ISSUED BY Environmental Protection Agency RTP Procurement Operations Division (D143-01) 4930 Old Page Road Research Triangle Park, NC 27709 | CODE | 7. ADMINISTERED BY (If other than item 6) Not Applicable. | CODE |
| 8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) To All Offerors/Bidders. | | (✓) | 9A. AMENDMENT OF SOLICITATION NO. PR-NC-03-10014 |
| | | ✓ | 9B. DATED (SEE ITEM 11) 01/30/03 |
| | | | 10A. MODIFICATION OF CONTRACT/ORDER NO. |
| | | | 10B. DATED (SEE ITEM 13) |
| CODE | FACILITY CODE | | |
| 11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS | | | |
| <input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified. | | | |
| 12. ACCOUNTING AND APPROPRIATION DATA (If required) | | | |
| 13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14. | | | |
| (✓) | A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A | | |
| | B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b). | | |
| | C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: | | |
| | D. OTHER (Specify type of modification and authority) | | |
| E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office. | | | |
| 14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) | | | |
| Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect. | | | |
| 15A. NAME AND TITLE OF SIGNER (Type or print) | | 16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) | |
| | | DAN M. NEUSTEDTER | |
| 15B. CONTRACTOR/OFFEROR | 15C. DATE SIGNED | 16B. UNITED STATES OF AMERICA | 16C. DATE SIGNED |
| (Signature of person authorized to sign) | | (Signature of Contracting Officer) | |
| NSN 7540-01-152-8070 PREVIOUS EDITION UNUSABLE | | 30-105 | STANDARD FORM 30 (REV 10-83) Prescribed by GSA FAR (48 CFR) 52.243 |

AMENDMENTS TO THE SOLICITATION

1. The Section L clause entitled "EVALUATION OF OTHER DIRECT COSTS (EP 52.215-130) (APR 1984)" has been modified. The text is as follows:

For evaluation purposes, offerors shall propose the following amounts:

For the Base Program Completion portion:

For proposal purposes, offerors should assume that 4 of the meetings and conferences referenced in Section 3.4.2 of the Statement of Work will be in Washington, DC and 4 of the meetings/conferences will be on the west coast.

Estimated cost of capital equipment (this figure does not include field supplies):

Base Period - \$120,000
Option Period I - \$123,600
Option Period II - \$127,308
Option Period III - \$131,127
Option Period IV - \$135,061

Estimated cost of land leases per year - \$43,080 (does not need an escalation factor applied per year)

Estimated cost of electric utilities for the sites per year - \$32,000 (does not need an escalation factor applied per year). The estimated annual cost for telephone service at all sites is \$35,000.

For the Level of Effort Portion:

Travel

2 one day trips/2 persons - Clingman's Dome, TN
17 one day trips/1 person - destinations unknown (use Chicago, IL for cost estimate)
5 trips/2 persons/4 days - destinations unknown (use Chicago, IL for cost estimate)

Equipment - \$280,500 (escalated 3% each year)

2. The Section M clause entitled "EVALUATION FACTORS FOR AWARD (EPAAR 1552.215-71) (AUG 1999)" has been modified. The text is as follows:

(a) The Government will make award to the responsible offeror(s) whose offer conforms to the solicitation and is most advantageous to the Government cost or other factors considered. For this solicitation, all evaluation factors other than cost or price when combined are significantly more important than cost or price.

(b) Evaluation factors and significant subfactors to determine quality of product or service:

1. Adequacy of Proposed Technical Approach.....25 Points

In responding to this RFP, each offeror's proposal must demonstrate a full and a complete understanding of the technical aspects of the exposure monitoring effort being solicited, including the types of problems that are likely to occur during performance of the monitoring

program. The offeror must demonstrate how it proposes to overcome problems to produce a comprehensive and well-coordinated program. An offeror's approach to conducting the monitoring program and overcoming any problems must be both technically sound and logistically appropriate and efficient. The offeror must demonstrate how it proposes to deliver or make available to EPA the screened continuous field data.

Each offeror's proposal shall include a description of the proposed technical approach for dry deposition and ozone monitoring in sufficient detail to demonstrate the offeror's basic technical knowledge of the state-of-the-science as well as any likely problems and potential solutions for critical atmospheric monitoring areas including:

- (A) installation, operation and maintenance of the station, instruments and data acquisition equipment, including repair and monitoring;
- (B) acquisition, processing, and validation of air quality and atmospheric deposition data;
- (C) maintenance and operation of the database management system, including data validation, storage, retrieval, analysis, and archiving of data;
- (D) analytical methods used to determine sample concentrations, including detection limits, reproducibility and accuracy.

2. Past Performance:25 Points

Demonstrated successful past performance of the offeror and any major subcontractors as evidenced by information gathered concerning the identified list of contracts and subcontracts completed during the past three years, and those currently in process for similar work, scope, and size. Work which would be considered similar includes: operating and maintaining an air quality monitoring network (e.g., a network that provides regional or national geographic coverage). The offeror's past performance will be evaluated based on the information obtained through the Past Performance Questionnaire (see Section J which identifies this attachment).

(Instructions: As discussed in the L Provision entitled *Past performance Information*, offerors shall submit information on the five (5) most recent contracts and subcontracts completed during the past three years and all contracts and subcontracts currently in process for similar work. This should include information on five (5) contracts and subcontracts and may include similar contracts with Federal, State and local governments, as well as commercial businesses. Information should be provided as indicated in the L Provision.)

NOTE: As discussed in the L Provision entitled *Past Performance Information*, if an offeror has no available past performance, a neutral rating of adequate (score=3) will be assigned for the past performance criteria.

3. Capabilities of Proposed Personnel.....15 Points

The offeror shall provide resumes describing specific, relevant

knowledge, education, experience and availability of all proposed key personnel, including key personnel of subcontractors and consultants.

Nominally, without requiring the offerors' proposals to conform, the key personnel shall include the lead technical personnel for the critical areas defined in the statement of work (e.g., the project manager, field operations manager, laboratory operations manager, and data operations manager). Adequacy and appropriateness of the key personnel to oversee and lead particular portions of this program shall be considered as part of this criterion.

Key personnel will be evaluated on: (1) their knowledge, experience, and leadership in their respective fields, as demonstrated through peer-reviewed publications, awards, and participation in previously successful monitoring and research programs; (2) their demonstrated ability to lead a team of scientists and technicians in providing high-quality work in the area of atmospheric monitoring; and (3) their education in the relevant sciences;

4. Adequacy of Proposed Management Plan.....10 Points

EPA will evaluate the clarity, conciseness and effectiveness of the offeror's (and any subcontractor's) management plans on the basis of the following elements. These elements are all considered essential to the success of the management plan and will not be separately scored.

- (A) Specific plans for identifying, selecting, and managing any proposed subcontractors to assure that their performance is of high quality, timely, and within budget.
- (B) Specific managerial procedures and administrative systems to monitor, control, and report technical and cost progress. Provide descriptions and examples.
- (C) Specificity and effectiveness of the offeror's transition plan. All plans must be designed to assure minimum disruption to the CASTNET and must identify and discuss the resolution of all problems that the offeror foresees.

5. Adequacy of Facilities and Equipment.....10 Points

Each offeror shall fully describe the equipment it will provide to supplement government furnished equipment (GFE) listed in the RFP. In particular, this should include the analytical laboratory and computer facilities to be used and the percent availability of these facilities to be committed to this monitoring program.

6. Quality Assurance Approach:10 Points

Each offeror shall describe in detail its proposed approach to achieving and maintaining the Data Quality Objectives of the CASTNet program. This discussion should include, but not necessarily be limited to: systems that will be implemented to ensure that quality assurance results will be incorporated into correcting or improving network operations in a timely manner; provisions to ensure the independence of quality assurance functions; provisions to ensure the consistency and comparability of new protocols and measurement systems with historical methods; and the training and experience of personnel who will be responsible for implementing the quality assurance program.

7. Small Disadvantaged Business (SDB) Participation (5 points)

Offerors will be evaluated based on the clause entitled "Small Disadvantaged Business Participation Evaluation Factor" set forth below.

3. The attachment entitled "STATEMENT OF WORK" has been modified. The text is as follows:

CASTNet Statement Of Work (SOW)**1. Project Background**

The Clean Air Status and Trends Network (CASTNet) is a long-term environmental monitoring network that measures changes in ambient air quality and atmospheric deposition over broad geographic regions of the U.S. Operating since 1987, CASTNet has evolved into a robust monitoring program which now comprises approximately 82 monitoring stations nationwide. The Environmental Protection Agency (EPA) operates a majority of the CASTNet monitoring stations. In cooperation with EPA, the National Park Service (NPS) operates approximately 30 stations. Table 1 is the list of current EPA - and NPS-operated sites. The primary monitoring objectives of CASTNet are to:

- Provide atmospheric data on total acid deposition, rural ground level ozone, and other forms of atmospheric pollution;
- Monitor the status and trends in regional air quality and atmospheric deposition; and
- Assess and report on geographic patterns and long-term, temporal trends in ambient air pollution and acid deposition.

Each CASTNet dry deposition station measures weekly average concentrations of sulfate, nitrate, ammonium, sulfur dioxide, and nitric acid, using a 3-stage filter pack. In addition, each site measures hourly concentration of ambient ozone levels and meteorological conditions required for calculating dry deposition rates. Table 2 is a list of pollutant monitoring and meteorological equipment deployed at a typical EPA CASTNet dry deposition station.

Dry deposition is calculated in the Network as a product of measured ambient air concentration values and inferentially-derived deposition velocities. Historically, the Multi-layer Model (MLM) has been used to estimate deposition velocities, accounting for stomatal and boundary layer resistance to deposition at multiple levels in a canopy. A new, more accurate model, the Multi-layer Biogeochemical Model (MLBC) is currently in development by EPA. This model builds on the MLM but also accounts for plant photosynthesis and respiration in estimating deposition velocities. EPA plans to make the MLBC available for use at the time of contract award through the multimedia integrated modeling system (MIMS) www.epa.gov/asmdnerl/mims. Additional background information, current standard operating procedures, and the CASTNet Quality Assurance Project Plan (QAPP) are available on the CASTNet web site located at: <http://www.epa.gov/castnet>.

As a long-term monitoring program, CASTNet is critical for characterizing trends in deposition levels and identifying relationships among emissions, atmospheric loadings and human health and ecological effects. The EPA, under several different mandates, relies on the data and information from CASTNet, used in conjunction with information from other national monitoring networks (e.g., the National Atmospheric Deposition Program/National Trends Network (NADP/NTN) and Interagency Monitoring of Protected Visual Environments (IMPROVE)), to evaluate the effectiveness of air pollution control strategies for regional areas. CASTNet tracks real-world environmental results over time and space as emission reductions take place. Since atmospheric changes occur very slowly and trends are often obscured by the wide variability of

measurements and climate, numerous years of continuous and consistent data are required to overcome this variability.

EPA's Office of Atmospheric Programs and Office of Air Quality Planning and Standards jointly administer CASTNet and are committed to the long-term atmospheric monitoring that is required to measure long-term trends. The Clean Air Markets Division (CAMD), Office of Atmospheric Programs has taken the lead in providing support and technical direction for CASTNet. CAMD has assembled a CASTNet Technical Advisory Committee comprised of technical specialists with expertise in all areas of deposition monitoring (e.g. quality assurance, network operations, data analysis, and methods development). The goals of this committee are to recommend changes and improvements to sampling and analysis methods, prioritize future research directions, and assist in developing long-term strategies for rural deposition monitoring.

2. SOW Organization

The scope of this SOW includes specific requirements for the base program and two base program options, a fixed-price portion for laboratory and analytical services, and the Level of Effort (LOE) portion. Specific requirements include broad and specific responsibilities for all aspects of operating and maintaining the CASTNet program to meet current and future EPA needs for air quality and atmospheric deposition monitoring.

Specific requirements apply to detailed conditions necessary to meet EPA needs. The Contractor shall provide the necessary technical support as described in this section to assist EPA in implementing the CASTNet program. The specific requirements are described for several critical monitoring functions of the CASTNet Base Program including quality assurance, field operations and data management and analysis. For the purposes of this solicitation, the offeror should assume operation of the 54 EPA-sponsored sites, two EPA-sponsored co-located sites and one site that operates dual day and night filter packs listed in Table 1; and shall only manage data and coordinate network activities for the sites operated by the NPS.

The two options for the base program address the contingency of operating additional sites: one option for those sites that will provide their own site operator and local infrastructure; and one option for those sites where the Contractor will provide on-going support and local infrastructure at the site.

The offeror shall propose a fixed price for laboratory sample analyses for all sites within the CASTNet network, described in more detail in the analytical laboratory section of the SOW.

The LOE portion of the SOW includes non-routine activities or special studies associated with CASTNet, such as special studies, installing new dry deposition sites, and installing and operating NADP/NTN wet deposition sites and IMPROVE sites. EPA anticipates establishing new CASTNet dry deposition monitoring stations sites that will help fill gaps in the network. The number of new sites shall not exceed six per year.

The successful offeror will provide sufficient personnel, time, and materials necessary to ensure the continued operation of the EPA monitoring network, executing the critical monitoring functions, including activities such as new site installation, and processing and validation of data collected.

The EPA anticipates services described in this section to initiate upon award of the contract. During a 90-day transition period beginning no later than 15 days after the contract award date, the Contractor shall begin coordinating the transition of operation of the network with the existing CASTNet contractor and shall begin operating all aspects of the network at the end of the 90-day transition period. Transition activities shall include the extraction and analysis of up to 100 filter or filtrate samples provided by

EPA to establish comparability of the Contractor's laboratory analyses with historical analyses.

Table 1. List of Active CASTNet Monitoring Stations

| Site_id | Station | Agency | State | Latitude | Longitude |
|---------|---------------------------------|--------|-------|----------|-----------|
| SND152 | Sand Mountain | EPA | AL | 34.289 | -85.970 |
| CAD150 | Caddo Valley | EPA | AR | 34.180 | -93.099 |
| GTH161 | Gothic | EPA | CO | 38.956 | -106.986 |
| ROM206 | Rocky Mountain NP Collocated | EPA | CO | 40.278 | -105.546 |
| ABT147 | Abington | EPA | CT | 41.840 | -72.010 |
| IRL141 | Indian River Lagoon | EPA | FL | 27.849 | -80.455 |
| SUM156 | Sumatra | EPA | FL | 30.110 | -84.990 |
| GAS153 | Georgia Station | EPA | GA | 33.179 | -84.405 |
| STK138 | Stockton | EPA | IL | 42.287 | -90.000 |
| ALH157 | Alhambra | EPA | IL | 38.869 | -89.623 |
| BVL130 | Bondville | EPA | IL | 40.052 | -88.372 |
| VIN140 | Vincennes | EPA | IN | 38.741 | -87.485 |
| SAL133 | Salamonie Reservoir | EPA | IN | 40.816 | -85.661 |
| KNZ184 | Konza Prairie | EPA | KS | 39.102 | -96.610 |
| CKT136 | Crockett | EPA | KY | 37.921 | -83.066 |
| MCK131 | Mackville | EPA | KY | 37.705 | -85.049 |
| MCK231 | Mackville Collocated | EPA | KY | 37.705 | -85.049 |
| CDZ171 | Cadiz | EPA | KY | 36.784 | -87.850 |
| BWR139 | Blackwater NWR | EPA | MD | 38.445 | -76.111 |
| BEL116 | Beltsville | EPA | MD | 39.028 | -76.817 |
| ASH135 | Ashland | EPA | ME | 46.604 | -68.414 |
| HOW132 | Howland | EPA | ME | 45.216 | -68.708 |
| UVL124 | Unionville | EPA | MI | 43.614 | -83.359 |
| HOX149 | Hoxeyville | EPA | MI | 44.181 | -85.739 |
| ANA115 | Ann Arbor | EPA | MI | 42.417 | -83.902 |
| CVL151 | Coffeetown | EPA | MS | 34.003 | -89.799 |
| CND125 | Candor | EPA | NC | 35.263 | -79.837 |
| BFT142 | Beaufort | EPA | NC | 34.885 | -76.620 |
| COW137 | Coweeta | EPA | NC | 35.061 | -83.431 |
| PNF126 | Cranberry | EPA | NC | 36.106 | -82.045 |
| WST109 | Woodstock | EPA | NH | 43.945 | -71.701 |
| WSP144 | Wash. Crossing | EPA | NJ | 40.313 | -74.873 |
| CTH110 | Connecticut Hill | EPA | NY | 42.401 | -76.654 |
| CAT175 | Claryville | EPA | NY | 41.942 | -74.552 |
| HWF187 | Huntington Wildlife Forest | EPA | NY | 43.973 | -74.223 |
| CHE185 | Cherokee Nation | EPA | OK | 35.751 | -94.670 |
| LYK123 | Lykens | EPA | OH | 40.917 | -82.998 |
| OXF122 | Oxford | EPA | OH | 39.533 | -84.729 |
| OAK172 | Quaker City | EPA | OH | 39.943 | -81.337 |
| DCP114 | Deer Creek | EPA | OH | 39.636 | -83.261 |
| EGB181 | Egbert | EPA | ON | 44.232 | -79.781 |
| EGB281 | Egbert Collocated ¹ | EPA | ON | 44.232 | -79.781 |
| KEF112 | Kane Exp. Forest | EPA | PA | 41.598 | -78.767 |
| LRL117 | Laurel Hill | EPA | PA | 39.988 | -79.252 |
| ARE128 | Arendtsville | EPA | PA | 39.923 | -77.308 |
| MKG113 | M.K. Goddard | EPA | PA | 41.427 | -80.145 |
| PSU106 | Penn State | EPA | PA | 40.721 | -77.932 |
| ESP127 | Edgar Evins | EPA | TN | 36.039 | -85.733 |
| SPD111 | Speedwell | EPA | TN | 36.470 | -83.827 |

| Site_id | Station | Agency | State | Latitude | Longitude |
|---------|----------------------------------|--------|-------|----------|-----------|
| PED108 | Prince Edward | EPA | VA | 37.166 | -78.307 |
| VPI120 | Horton Station | EPA | VA | 37.330 | -80.558 |
| LYE145 | Lye Brook | EPA | VT | 43.051 | -73.061 |
| PRK134 | Perkinstown | EPA | WI | 45.207 | -90.597 |
| PAR107 | Parsons | EPA | WV | 39.090 | -79.662 |
| CDR119 | Cedar Creek | EPA | WV | 38.880 | -80.848 |
| PND165 | Pinedale | EPA | WY | 42.929 | -109.788 |
| CNT169 | Centennial | EPA | WY | 41.364 | -106.240 |
| DEN417 | Denali NP | NPS | AK | 63.723 | -148.968 |
| POF425 | Poker Flats, Yukon Flats NM | NPS | AK | 65.118 | -147.433 |
| GRC474 | Grand Canyon NP | NPS | AZ | 36.059 | -112.182 |
| CHA467 | Chiricahua NM | NPS | AZ | 32.010 | -109.389 |
| JOT403 | Joshua Tree NM | NPS | CA | 34.071 | -116.390 |
| SEK402 | Sequoia NP - Lookout Pt | NPS | CA | 36.429 | -118.762 |
| PIN414 | Pinnacles NM | NPS | CA | 36.485 | -121.155 |
| YOS404 | Yosemite NP - Turtleback Dome | NPS | CA | 37.711 | -119.704 |
| LAV410 | Lassen Volcanic NP | NPS | CA | 40.536 | -121.572 |
| DEV412 | Death Valley NM | NPS | CA | 36.508 | -116.838 |
| MEV405 | Mesa Verde NP | NPS | CO | 37.198 | -108.490 |
| ROM406 | Rocky Mtn NP | NPS | CO | 40.277 | -105.545 |
| EVE419 | Everglades NP | NPS | FL | 25.388 | -80.683 |
| HVT424 | Hawaii Volcanoes NP | NPS | HI | 19.447 | -155.300 |
| ACA416 | Acadia NP | NPS | ME | 44.377 | -68.261 |
| VOY413 | Voyageurs NP | NPS | MN | 48.412 | -92.829 |
| GLR468 | Glacier NP | NPS | MT | 48.510 | -113.995 |
| THR422 | Theodore Roosevelt NP | NPS | ND | 46.895 | -103.378 |
| GRB411 | Great Basin NP | NPS | NV | 39.005 | -114.215 |
| GRS420 | Great Smoky NP - Look Rock | NPS | TN | 35.631 | -83.942 |
| BBE401 | Big Bend NP | NPS | TX | 29.310 | -103.177 |
| CAN407 | Canyonlands NP | NPS | UT | 38.458 | -109.821 |
| SHN418 | Shenandoah NP - Big Meadows | NPS | VA | 38.523 | -78.436 |
| VII423 | Virgin Islands NP - Lind Pt | NPS | VI | 18.336 | -64.796 |
| OLY421 | Olympic NP | NPS | WA | 48.098 | -123.426 |
| NCS415 | North Cascades NP | NPS | WA | 48.539 | -121.446 |
| MOR409 | Mount Rainier NP | NPS | WA | 46.761 | -122.121 |
| YEL408 | Yellowstone NP | NPS | WY | 44.565 | -110.400 |

¹ Site operates collocated dual day/night filter pack sampling equipment

Table 2. List of pollutant monitoring and meteorological equipment deployed at a typical EPA CASTNet dry deposition site

| Field Equipment | Description | Application |
|-------------------------------|---|--|
| Ozone Analyzer | Thermo Environmental Model 49-103 | Measures ambient O ₃ concentrations integrated over a hourly period |
| Wind Speed and Direction | Climatronics anemometer chopper wheel, R.M. Young Wind Monitor OR F460 vane and translator, R.M. Young Wind Monitor | Input parameters to the Multi Layer Model |
| Temperature/Delta Temperature | Climatronics temperature sensors | Input parameters to the Multi Layer Model |
| Relative Humidity | Climatronics model 100098 or Rotronics MP-100F humidity temperature probe | Input parameter to the Multi Layer Model |
| Solar Radiation | LI-COR pyranometer, silicon photovoltaic sensor with R.M. Young or Climatronics translator | Input parameter to the Multi Layer Model |
| Surface Wetness | R.M. Young wetness sensor | Input parameter to the Multi Layer Model |
| Precipitation | Climatronics 8-inch heated tipping bucket rain gauge | Input parameter to the Multi Layer Model |
| 3 Stage Filter Pack | Sequence of Filters: Teflon, Nylon, and Potassium carbonate-impregnated Whatman | Collects ambient concentrations of particulate SO ₄ , NO ₃ , NH ₄ , and gaseous SO ₂ and HNO ₃ integrated over weekly periods |
| Flow Control | Teledyne Hastings or Tylan Mass Flow Controllers | Maintains constant sample flow |
| Data Acquisition | Odessa DSM-3260 and DSM 3260L (backup) OR ESC Model 8816 | Records data for select continuous measurement parameters |

3. Specific Requirements for Base Program

The following sections describe the specific requirements for the Base Program. In addition to these specific requirements, the Contractor shall implement the transition plan as outlined in its technical proposal.

3.1 Quality Assurance

Quality Assurance (QA) includes, but is not limited to, those activities conducted by and for the Contractor's management that assure and evaluate the effectiveness and appropriateness of all monitoring-related processes that might affect the quality of data delivered to EPA under the contract. Typically, QA activities shall ensure that the Quality Control (QC) functions are carried out as designed into the operational functions of the work. The Contractor shall periodically evaluate the timeliness, effectiveness, and

appropriateness of the QC activities, as outlined and specified in the QA guidance.

The Quality Management Plan (QMP) and Quality Assurance Project Plan (QAPP) are critical planning documents for any environmental data operation. The corporate QMP defines an organization's QA-related policies, criteria for and areas of application, and definition of roles, responsibilities, and authorities. The Contractor shall prepare and deliver a QMP as part of the proposal.

The QAPP documents how environmental data operations are planned, implemented, and assessed during the life cycle of program, project, or task. The purpose of the QAPP is to define in detail how specific QA and QC activities will be implemented during this project. Standard Operating Procedures (SOPs) document in detail the routine or repetitive administrative and technical activities to facilitate consistency and integrity of the product. SOPs facilitate activities that are managed under a QAPP.

The Contractor shall prepare a draft comprehensive QAPP, including all related manuals and SOPs, and deliver four printed copies to EPA for comments within 90 days of contract award. After receipt of EPA's comments, the Contractor shall deliver within 30 days one copy of the plan to the EPA QA Officer for approval. Upon approval by the EPA QA Officer, the Contractor shall deliver four printed copies and an electronic version of the plan to EPA.

The QAPP and all associated documents shall conform to EPA general guidance and guidance for non-EPA organizations, as described at http://www.epa.gov/quality/qa_docs.html. The QAPP will include all of the elements describe in EPA Requirements for QA Project Plans (QA-R/5). The QAPP and SOPs shall be based, as applicable, on the Quality Assurance Handbook for Air Pollution Measurement Systems, Volumes I, II, and IV. At a minimum, these documents shall provide sufficient detail of all aspects of the CASTNet operation to allow a user to perform the same activities and measurements and achieve similar results, and shall include the operational aspects of all sites within the CASTNet program regardless of operating agency. Method summaries and SOPs will be provided by EPA for those equipment and procedures operated or performed by other agencies which differ from those of the Contractor.

The QA/QC program shall provide a uniform basis for sample handling, analysis, instrument and methods calibration and maintenance, equipment and method acceptance testing, performance evaluation, analytical data gathering, data processing and analysis, and reporting. In many instances where methodologies are available, specific QC procedures are incorporated into the method documentation.

The Contractor shall perform quality assurance activities independent of project management. The Contractor shall submit quarterly and annual QA reports in accordance with the requirements established in the attachment entitled "Reports of Work."

3.2 Field Operations

The Contractor shall perform the following tasks or equivalent tasks that meet CASTNet objectives for all EPA-operated sites. If alternative methods are proposed, the proposal must include sufficient documentation to demonstrate equivalency or improvement to the following requirements.

3.2.1 Maintain Existing Sites

The Contractor shall be responsible for initiating and maintaining contracts and/or agreements with landowners and site operators, as necessary, for

operating and maintaining sites within the network. Trend assessments are one of the primary objectives of CASTNet and require consistent measurements at sampling stations having continuous records. Many stations within the network have been in operation since before 1990 and EPA places a high priority on maintaining these long-term records. EPA encourages scientific collaboration and in-kind contributions on the part of the land owners and site operators. The Contractor shall facilitate these activities whenever possible.

3.2.2 Site Operator Responsibilities

The Contractor shall ensure that trained site operators visit their respective CASTNet sites on a routine basis, each Tuesday, coinciding with a seven-day sampling schedule. The Contractor shall ensure that the site operator inspects the site and performs the following tasks: filter pack change outs, sample shipment, equipment checks and tests, routine preventative and corrective maintenance, sample media collection, data acquisition operations, quality assurance and documentation, and other essential duties necessary to meet CASTNet data quality objectives.

The Contractor shall ensure the site operator observes and records CASTNet site surface conditions (e.g., dew, frost, snow) and vegetation status every Tuesday at the CASTNet sites. During the last week in June of each year, the Contractor shall also provide information on major plant species and land-use classifications within 1 km of the site. The Contractor shall ensure that the information gathered from these observations is of sufficient quality to support dry deposition model calculations and meets field data quality objectives.

3.2.3 Equipment Repair and Maintenance

The Contractor shall be responsible for the maintenance and repair (including costs) of all instruments, shelters, and data acquisition systems. The equipment shall be Government Furnished Property (GFP) or Contractor Acquired Property (CAP). EPA may require equipment to be upgraded as new techniques, instrumentation, and improved components become available, and may require the replacement of outdated equipment that has reached the end of its operating lifetime.

3.2.4 Training

The Contractor shall provide standard substantive, hands-on training to each site operator. Training topics shall include, but not be limited to, an overview of the CASTNet program, equipment operation and maintenance, sampling procedures, documentation and quality assurance. Particular emphasis shall be placed on training operators on instrument installation, equipment calibrations, maintenance, repairs, and sample change-out procedures. The Contractor shall evaluate operator performance in these activities, and provide adequate training until the site operator is proficient, in accordance with the data quality objectives.

3.2.5 Field Measurements

The Contractor shall perform the measurements listed in Table 3 at each site using the specified method, or an equivalent or better method that meets the acceptance criteria listed in Table 3.

Table 3. Field Measurements and Acceptance Criteria for Calibrations

| Measurement | Method | Acceptance Criteria |
|--------------------------|-------------------------------------|--|
| Filter Pack Flow | Mass Flow Controller | $\pm 2\%$ of actual flow |
| Ozone | UV absorbance | $\pm 5\%$ of actual value |
| | | $0.9500 < \text{Slope} < 1.050$ |
| | | $-3.0 \text{ ppb} < \text{Intercept} < 3.0 \text{ ppb}$ |
| | | $r^2 > 0.995$ |
| Wind Speed | Anemometer | $\pm 0.2 \text{ m/sec}$ of actual wind speed at speeds less than 5 m/sec |
| | | $\pm 5\%$ of actual wind speed at greater than or equal to 5m/sec. |
| Wind Direction | Wind Vane | $\pm 3^\circ \text{ C}$ for each cardinal point |
| Relative Humidity | Thin film capacitor | $\pm 20\%$ at RH less than 85% |
| | | $\pm 5\%$ at RH $\geq 85\%$ |
| Solar Radiation | Pyranometer | $\pm 5\%$ of average solar radiation |
| Precipitation | Tipping Bucket Raingage | $\pm 0.02 \text{ inches}$ at 0.50 inches of precipitation |
| Surface Wetness | Conductivity Bridge | Full-scale response to test resistance |
| Temperature | Platinum RTD | $\pm 0.3^\circ \text{ C}$ of actual temperature |
| Delta Temperature | Platinum RTD at 1 m and 10 m | $\pm 0.3^\circ \text{ C}$ of actual temperature |

3.2.6 Filter Pack Sampling

Particles and selected gases are collected by passing air at controlled flow rates through a sequence of Teflon, Nylon, and base-impregnated filters. The Contractor shall perform filter pack sampling and ozone measurements at 10 meter above ground surface using a tilt-down tower. Filter pack flow shall be maintained with mass flow controllers at standard conditions of 25°C and 760 mm mercury. Flow shall be maintained at 1.5 liters per minute (LPM) at sites having higher concentrations of analytes (generally sites in the Eastern U.S.) and 3.0 LPM at sites having lower concentrations (generally sites in the Western U.S.) or at other flow rates upon technical direction from the PO. Filter packs shall be replaced at each site every Tuesday at approximately 0900.

3.2.7 Field Calibrations and Preventative Maintenance Schedule

The Contractor shall visit each active CASTNet monitoring station at least twice per year to perform routine calibration and maintenance of all CASTNet field equipment. In preparing for site visits, the Contractor shall coordinate with site operators and notify the PO of all scheduled site visits no less than 2 weeks prior to monitoring site trips. Upon arrival at each monitoring site and before any adjustments are made to any instruments, the

Contractor shall conduct and record complete performance checks on all air quality systems, meteorological instruments, and data acquisition systems.

3.2.8 Equipment Testing, Modification and Parts Inventory

The Contractor will be required to purchase new equipment and/or spare parts for the on-going operation and enhancement of the network. Equipment and spare parts shall be delivered to the Contractor's facility or installation sites. Prior to deploying equipment for service, the Contractor shall ensure that field equipment is operating properly by performing and documenting acceptance testing of all the equipment purchased by EPA that is delivered to the Contractor's facility. Acceptance tests may include comparisons of instrument outputs to known, calibrated values and checks of zero, span, and drift, noise levels, response time, and detection limits. The Contractor shall return to the manufacturer any equipment that fails acceptance testing.

The Contractor shall ensure sufficient spare parts are on hand to meet or exceed the requirements of this contract and shall purchase spare parts on a periodic basis to ensure sufficient spare parts are available at all times. The Contractor shall be responsible for properly affixing the property tags, which EPA will provide the Contractor, to all EPA-purchased equipment and parts.

The Contractor shall maintain and update a database inventory of all EPA capital equipment. EPA shall deliver the current inventory of equipment to the Contractor at the onset of the contract period. At a minimum, the inventory database shall contain the following fields: equipment description, manufacturer name, model number, serial number, EPA property number, purchase price, month and year of purchase, current condition and disposition. For quality assurance purposes, the history of all ozone analyzers shall be traceable using this database. The Contractor shall provide a written report on equipment inventory to EPA annually, and upon request by the PO.

The Contractor shall provide State and local agencies with access to CASTNet sites for the purpose of audits, installation of data loggers or installation and operation of additional monitoring equipment as space permits. For the purpose of costing, no more than 10 sites will be visited by State or local agencies per year.

3.3 Data, Information Management And Analysis

The Contractor shall be responsible for storage and reporting of all information described in this Statement of Work, and shall maintain an archive of historical operations, deposition and air quality data acquired during previous contract periods. To manage and report this information efficiently and accurately while continuing to acquire data from on-going operations, the Contractor shall manage a relational database in a development/testing/production environment. The database management system (DBMS) that the Contractor uses shall be capable of:

- Providing data security in compliance with EPA requirements for external data systems;
- Efficiently managing a database of approximately 30 gigabytes in size;
- Efficiently managing a database having over 100 tables, with some tables having approximately 100 million records;
- Providing system-level user access and data integrity constraints.

EPA currently uses the Oracle® Enterprise Database 8i Release 3(8.1.7) DBMS in a Solaris 8 environment. EPA anticipates that this platform will be used

throughout the life of this contract, although upgrades to the DBMS and operating system are likely. Upon award of the contract, EPA shall deliver to the Contractor a complete and functional archive of the current contractor's Microsoft SQLServer database and Visual Basic data management application, and a complete and functional export of EPA's Oracle schema.

The Contractor shall be responsible for acquiring, installing and running the MLM and/or MLBC, as specified in technical direction by the PO, using appropriate model inputs. EPA shall supply the Contractor with the most recent compiled modeling programs. The Contractor shall be responsible for producing and maintaining input files required by the model programs and for loading model output files into the database through documented scripts and procedures. All software, scripts and documentation developed under this contract shall be available to EPA and delivered upon request.

The Contractor shall be capable of performing complex statistical analyses (e.g., principal component, cluster and time series analyses) using a robust statistical analysis package (e.g., SAS, S-plus, and R).

The Contractor shall be capable of performing basic geographic and geostatistical analyses such as calculating geographic means and creating interpolations of geographic data sets using Inverse Distance Weighted, Kriging and Co-Variant Kriging algorithms; and producing publication-quality maps from these analyses.

3.3.1 Data Management

The Contractor shall be responsible for managing all information described in this Statement of Work, including the data management activities required for data collection, processing, validation, storage, documentation and reporting. The types of data include, but are not limited to:

- Continuous measurements, observations and equipment status monitoring in the field. All continuous data and equipment status monitoring shall be stored in the database as hourly averages. All observations made by the field operators shall be acquired either electronically (e.g., email or Web site) or through data transcription from hard copy forms sent in by the site operator.
- Results of laboratory analyses, including those types for routine samples, routine quality assurance samples, samples for method development or special studies, internal and external laboratory audits, internal and external system audits, and inter-laboratory comparisons. All laboratory results shall include identification in the database by type of sample.
- Site status and location data, including latitude, longitude, elevation, FIPS codes, nearby NADP sites, political address (e.g., country, state, and county), conditions and surroundings within 1 km, history of instrumentation of the site, site contacts, and site operators and their contact information.
- Site photos and maps. All site photos shall be stored as binary objects in the database or as references to electronic images. The referenced electronic image shall be considered part of the database.
- Measurements and criteria from field calibrations and audits.
- Model results.
- Inter-network comparisons and other special studies. All sampling and analysis data from inter-network comparisons and other special studies shall be identified, documented and stored in the database.

- Quality assurance information from routine and non-routine sources. Data from routine and non-routine quality assurance measurements shall be identified, documented and stored in the database.
- The National Park Service's (NPS's) CASTNet data. The Contractor shall import and manage all available data acquired by the NPS for the operation of their CASTNet sites for all types of data listed above. The NPS or their Contractors will deliver data electronically to the Contractor in a format agreeable to all parties.
- External data sources. The Contractor shall be responsible for acquiring and managing final data products from NADP/NTN wet deposition database, IMPROVE aerosol data, and Eta model output from the U.S. National Centers for Environmental Prediction (NCEP). These external data products shall be used for estimating total (wet + dry) deposition, network-intercomparisons, and back-filling of missing meteorological data, respectively.

The Contractor shall screen and validate data from continuous field measurements for reasonableness using historical criteria, physical constraints, equipment status or other established and documented criteria. All data shall be screened for data anomalies by applying screening checks for physical maximum, minimum, reasonable boundaries, rate of change, allowable characters or other documented criteria. Any changes to raw data shall be recorded in the database and identified with a data validity code that identifies the circumstance or criteria by which the determination was made that the data is anomalous. All electronic data entered by human data entry shall be validated either by double entry or statistically defensible means to document a minimum of 99.99 percent data accuracy. All data transcribed from paper media to electronic media shall be validated either by independent double entry or statistically defensible means to document a minimum of 99.99 percent data accuracy.

The Contractor shall maintain a data dictionary of all objects within the database, including tables, columns, constraints, and data validation codes. The Contractor shall use established good data practices to ensure that database objects and applications developed by the Contractor have been properly tested and documented before use in the production environment. The Contractor shall ensure that all electronic data acquisitions and transfers into and from the database are accurate and complete by checksum comparisons, or equivalent methods.

3.3.2 Data Reporting

The Contractor shall deliver data to EPA for loading into the EPA database with a minimum amount of human intervention. The Contractor shall transfer data to EPA with an electronic agent (e.g., Oracle® Corporation's SQL*Net™), or by creating and delivering electronic data on a routine basis that are compatible with EPA's DBMS. If the Contractor requires connection to EPA servers for data transfers, the Contractor must conform to requirements for access to EPA servers described at <http://www.epa.gov/webguide/started/getserv.html>, and shall have sufficient Internet bandwidth to efficiently transfer data. The Contractor shall be responsible for the installation and configuration of SecuRemote™ software on their servers if the Contractor proposes to have Internet access to EPA servers.

All data acquired through this contract shall be available to EPA on a routine schedule, or in response to ad hoc data requests from the PO. The EPA Project Officer shall determine the timing and content of deliveries pursuant to the contract Technical Direction Clause. An electronic replica of the database and all supporting applications shall be delivered to EPA annually. Data

deliveries shall include but not be limited to validated primary measurements from continuous monitors, sampling information, analytical results, laboratory quality assurance data, inter-laboratory comparisons, model results, time aggregations, data from special studies, and documentation for all database objects. Documentation of all database objects shall be included within the database, and shall be clear and succinct with a minimum of jargon.

Contractor shall deliver or make available to EPA the screened continuous field data. Offerors are encouraged to include in its proposal innovative way(s) to deliver or make available said data with 24 hours of data acquisition.

3.3.3 Data Archiving

The Contractor shall maintain historical archives of CASTNet data from its inception, including primary measurements from continuous monitors, sampling information, analytical results, laboratory quality assurance data, inter-laboratory comparisons, model results, site locations and configurations, data from special studies, and data from other organizations used in the CASTNet program.

3.3.4 Data Security And Disaster Recovery

The Contractor shall provide for data security and deliver a detailed disaster recovery plan to the PO within 90 days of contract award. The disaster recovery plan shall include all elements of good data management practices, including an effective backup strategy; off-site storage of database backup files, critical software and electronic documents; and an effective data restoration plan that provides for a minimum of data loss in the event of a disaster.

3.4 Other Requirements

3.4.1 Annual Report

The Contractor shall deliver to EPA an annual report summarizing the network for the prior calendar year. Annual Report requirements are described in the attachment entitled "Reports of Work."

3.4.2 Meetings and Conferences

The EPA PO may request the Contractor to attend and participate in conferences or meetings to present papers related to atmospheric deposition, air pollution or the operation of CASTNet. The Contractor shall also be attending NADP meetings to obtain information discussed in those meetings.

4. Base Program Options

In addition to the Base Program described above, EPA anticipates establishing new CASTNet dry deposition monitoring stations sites that will help fill gaps in the network. The number of new sites shall not exceed six per year. The installation and set up of new sites will be accomplished through Level of Effort work assignments as described below. The operation of the sites will

be added to the contract by the issuance of a modification to add Options A or B as described below.

4.1 Option A. Operating a New Dry Deposition Site Without Local Collaboration

Upon exercising this option, the Contractor shall operate a new dry deposition site in accordance with the requirements described in the Base Program above.

4.2 Option B. Operating a New Dry Deposition Site With Local Collaboration

Upon exercising this option, the Contractor shall operate a new dry deposition site in accordance with the requirements described in the Base Program above, except that the Contractor shall not be responsible for those tasks described in the *Site Operator Responsibilities* section above.

5. Fixed-Price Analytical and Laboratory Services

The Contractor shall be responsible for providing sample preparation and analytical services for two types of samples: 1) sample filters, and 2) precipitation samples for inter-laboratory comparisons. The Contractor shall maintain the technical capability to perform the required analytical services and provide an acceptable level of personnel, equipment, and systems. The Contractor's responsibilities shall include the following:

- Purchase, maintenance, and pre-sampling treatment of all required filter media;
- Appropriate shipping containers and shipment of all filter media to the field, including field blanks;
- Analysis of all samples, laboratory quality control samples, blanks, calibration standards, filter production-lot acceptance testing and performance evaluation samples;
- All sampling and analysis data entry;
- Purchase and maintenance of laboratory instruments and consumable supplies; and
- Storage and archival of all sample extracts and filter media.

For the purposes of this proposal, offerors shall assume the following samples will be submitted for the base year and each of the four option years:

Table 4. Assumed Sample Numbers for Fixed-Price Proposal

| Type | Description | Units | Frequency (per year) | Total Samples (per year) |
|---------------|---|-------|----------------------------|-----------------------------------|
| Field samples | Regular weekly filter packs collected in the field at each CASTNet site | 85 | 52 | 4420 |

| Type | Description | Units | Frequency (per year) | Total Samples (per year) |
|---|---|-------|----------------------|--------------------------|
| Field blanks | Field blanks are a standard filter pack that is shipped to each CASTNet site on a quarterly schedule. The filter pack is never opened by the site operator and is returned to the lab for analysis. | 85 | 4 | 340 |
| Laboratory blank | Filters representing the same filter media as weekly field samples (Teflon®, Nylon®, and Whatman®), but are stored in sample bottles at the laboratory | 2 | 52 | 104 |
| USGS artificial precipitation sample | Rain water samples submitted by the USGS as part of their Inter-laboratory Comparison Program | 8 | 12 | 96 |
| National Water Research Institute precipitation samples | Rain water and natural water samples submitted by the National Water Research Institute of Environment Canada. | 10 | 1 | 10 |

5.1 Precipitation Samples

The Contractor shall analyze precipitation and natural water laboratory inter-comparison samples for anions (SO_4^{2-} , NO_3^- , and Cl^-), base cations (Na^+ , Ca^{2+} , K^+ , and Mg^{2+}), ammonium (NH_4^+), and pH using the methods specified in Table 5. Each sample shall be analyzed for the complete set of analytes. Inter-laboratory comparison studies are necessary for the documentation of laboratory performance and coordination of results with other North American monitoring networks, including IMPROVE, the Canadian Acid Precipitation Monitoring Network (CAPMoN), and NADP. Upon technical direction from the PO, the Contractor may be required to participate in up to five inter-laboratory comparisons per year.

Table 5. Analytical Methods and Minimum Detection Limits for Precipitation Samples

| Analyte | Method | Minimum Detection Limit |
|--------------------|-----------------------------------|-------------------------|
| Ca^{2+} | EPA 6010B (ICP/AES) | 0.003 mg/L |
| Cl^- | EPA 300.0 (IC) | 0.003 mg/L |
| K^+ | EPA 6010B (ICP/AES) | 0.005 mg/L |
| Mg^{2+} | EPA 6010B (ICP/AES) | 0.003 mg/L |
| Na^+ | EPA 6010B (ICP/AES) | 0.005 mg/L |
| NH_4^+ | EPA 350.1 (Automated Colorimetry) | 0.02 mg/L |
| NO_3^- | EPA 300.0 (IC) | 0.008 mg/L |
| SO_4^{2-} | EPA 300.0 (IC) | 0.040 mg/L |
| pH | EPA 150.1 (pH meter) | 0.01 units |

5.2 Filter Pack Samples

The Contractor shall analyze filter media for anions (SO_4^{2-} , NO_3^- , and Cl^-), base cations (Na^+ , Ca^{2+} , K^+ , and Mg^{2+}), and ammonium (NH_4^+). Each sample shall be analyzed for the complete set of analytes. The Contractor shall prepare the media and filter packs for deployment into the field, ship the filter packs to each site, receive and log the filter packs after sampling, disassemble the filter packs, extract the filters, analyze the extracts, and report results.

5.2.1 Filter Pack Preparation and Media Acceptance Testing

The Contractor shall be responsible for the purchase and preparation of all filter media. Each three-stage filter pack will contain a Teflon® filter, a Nylon® filter, and a base-impregnated cellulose (e.g., Whatman®) filter. The Contractor is responsible for impregnating the cellulose filter with potassium carbonate. The Contractor shall coordinate the purchase of filter media with other monitoring networks to ensure consistency in sample results.

The Contractor shall perform acceptance tests on all filters before assembly. Acceptance testing shall include the extraction and analysis of a sufficient number of filters from each type of filter box to determine with 95 percent confidence that analyte contamination for the box of filters does not exceed 2 times the method detection limit.

Filter packs shall be assembled. Prior to loading of filters, each three-stage filter pack assembly shall be cleaned with deionized water, oven-dried, and inspected for damage. Every week, the Contractor shall ship filter packs by second day delivery to field sites for sampling. Laboratory blank samples shall be prepared weekly when the filter packs are prepared. In addition, filter blank samples shall be sent to the field quarterly in order to evaluate the effects of preparation and shipping on sample media.

5.2.2 Filter Extraction

After sampling in the field, filter packs shall be received from the field sites and disassembled for extraction and analysis. The Contractor shall extract all filters using methods that produce extraction efficiencies comparable to historical CASTNet filter extraction methods. Sample extracts shall be stored at 4 degrees Celsius for at least 8 hours prior to analysis.

5.2.3 Analysis of Filter Extracts

The Contractor shall analyze filter extracts using the methods specified in Table 6 or an equivalent or better method which has been approved by EPA.

Table 6. Analytical Methods and Minimum Detection Limits for Filter Extracts

| Analyte | Filter Media | Method | Minimum Detection Limit |
|------------------|----------------------------|-----------------------------------|-------------------------|
| Ca^{2+} | Teflon® | EPA 6010B (ICP/AES) | 0.003 mg/L |
| Cl^- | Teflon® | EPA 300.0 (IC) | 0.003 mg/L |
| K^+ | Teflon® | EPA 6010B (ICP/AES) | 0.005 mg/L |
| Mg^{2+} | Teflon® | EPA 6010B (ICP/AES) | 0.003 mg/L |
| Na^+ | Teflon® | EPA 6010B (ICP/AES) | 0.005 mg/L |
| NH_4^+ | Teflon® | EPA 350.1 (Automated Colorimetry) | 0.02 mg/L |
| NO_3^- | Teflon®, Nylon®, cellulose | EPA 300.0 (IC) | 0.008 mg/L |

| | | | |
|-------------------------------|-------------------------------|----------------------|------------|
| SO ₄ ²⁻ | Teflon®, Nylon®, cellulose | EPA 300.0 (IC) | 0.040 mg/L |
| pH | (Precipitation only) | EPA 150.1 (pH meter) | 0.01 units |

5.3 Sample Handling, Custody, and Storage

After field sampling is completed, samples shall be sent back to the laboratory where they shall be received, labeled, and inspected for damage. Samples shall be received by the laboratory no more than two (2) weeks after the sample was removed from the sampling tower. Samples shall be stored at 4°C before and after analysis. Extracts shall be stored for a minimum of two years after the collection of the sample.

5.4 Data acquisition system

The Contractor shall use an automated data acquisition system or provide for and document a minimum 99.99 percent data accuracy of manually entered data, for all laboratory data acquisition.

5.5 Laboratory Quality Assurance

In order to maintain an acceptable quality of data and to establish estimates of accuracy and precision, the Contractor shall have quality assurance procedures for laboratory analysis in place. The Contractor shall randomly replicate 5% of the samples within an analysis to assess precision.

The Contractor shall analyze the following quality control standards:

- A NIST-traceable Calibration Verification Standard produced by an independent lab shall be run after every 10 environmental samples and at the end of the batch to track instrument drift;
- A NIST-traceable reference standard produced by an independent lab shall be analyzed at the beginning and end of each run to assess accuracy; and
- One method blank shall be analyzed with each extraction.
- For Ion Chromatography analyses, internal injection standards shall be prepared to assess shifts in retention time and sample injection volume.

Calibration curves shall be generated for all analyses, and all samples must fall within range of the calibration curve. Quality control standards, calibration curves, sample replicates, and filter blanks must meet the specified acceptance criteria (See Table 7). The Contractor shall document in the Quality Assurance Project Plan corrective actions for samples that do not meet these acceptance criteria. Quality assurance analyses shall be reported to EPA quarterly using accepted laboratory methods for aggregating and calculating statistics.

Table 7. Acceptance Criteria for Quality Control Samples

| Quality Control Procedure | Acceptance Criteria |
|--|--|
| Calibration curve (minimum 5 points) correlation coefficient | ≥ 0.995 |
| Calibration curve Y-intercept 95% Confidence Limit | < Reporting limits |
| Calibration curve responses | All samples must be within the standard calibration range. |

| | |
|-----------------------------------|---|
| Calibration Verification Standard | + 5% of true value for IC and ICP/AES analyses |
| | + 10% of true value for AC (NH ₄ ⁺) analyses |
| Sample replicate | + 5% difference as compared to the initial sample run |
| Method blank | ≤ 2x reporting limits |
| Reference sample | + 5% of true value for IC analyses |
| | + 10% of true value for AC (NH ₄ ⁺) analyses |
| Filter blank | ≤ 2x reporting limits |

To minimize the occurrence of instrument failure and system malfunctions, the Contractor shall be responsible for instrument calibration, inspection, testing, and maintenance including, but not limited to, lubrication of pumps, prevention of instrument leaks, and maintenance and replacement of valves and fittings.

6. Level Of Effort

In addition to the Base Program and Options A-B provisions, the Contractor shall conduct any non-routine activities or special studies associated with the CASTNet program, as directed in work assignments issued by the EPA Contracting Officer. The following are examples of such activities that may be performed. They are not, however, inclusive of all CASTNet related activities that may be performed.

If directed in work assignments issued by the EPA CO, the Contractor shall establish and install new dry deposition sites in accordance with CASTNet siting criteria.

The Contractor shall establish and operate new wet deposition sites in accordance with NADP protocols.

The Contractor shall perform intercomparison tests of candidate methods to replace the techniques currently in use by CASTNet. The Contractor shall install, calibrate, and operate such measurement devices according to EPA specifications and directions. Data handling and reporting requirements shall be according to EPA specifications based on the needs of any specific study. The Contractor shall also make available CASTNet sites, facilities, and operators to external QA auditors, as required.

The Contractor shall operate or collaborate with (e.g., collect samples at, analyze samples for, or make CASTNet facilities available to) other integrated research monitoring programs, such as the NADP, IMPROVE or other monitoring networks operated by EPA.

The Contractor shall, through work assignments issued by the EPA CO, provide for the operation and maintenance of an EPA system (provided as GFE) for direct measurement of dry deposition at sites specified by the Work Assignment Manager (WAM). The system's instruments and components are designed for measuring surface fluxes of ozone, sulfur dioxide, and carbon dioxide by eddy correlation and fluxes of nitric acid by a gradient approach. Tasks shall include but not necessarily be limited to: 1) evaluating proposed sites for direct dry deposition measurements; 2) transporting equipment to the designated sites; 3) setting up and operation of the system for designated periods; 4) performing maintenance and calibrations; 5) conducting special

sampling as directed by the WAM; and 6) preparing technical and administrative reports documenting the system, operating and quality control procedures, and data collected.

The Contractor shall prepare ad hoc summaries of data, associated data quality information, and statistical analysis for data patterns, trends, etc.

4. The attachment entitled "ANSWERS TO SOLICITATION QUESTIONS" has been added. The text is as follows:

The following responses are being provided as a result of questions received on this solicitation:

Question #1: Section 5 of the Statement of Work specifies analytical methods in Tables 5 and 6. Would EPA accept new, alternate methods that have not been approved by EPA if it could be demonstrated that they have equivalent or better detection limits, etc.?

Answer #1: Alternative analytical methods are acceptable provided the offeror demonstrates the proposed method is equivalent or better than the existing method in terms of actual detection limit, accuracy, bias, precision and reproducibility of the method.

Question #2: Section 5, Fixed-Price Analytical and Laboratory Services, Subsection 5.4: will independent double entry provide satisfactory validation as stated for Data Management in subsection 3.3.1?

Answer #2: Independent double entry is satisfactory validation for the Analytical and Laboratory Services.

Question #3: Table 7 lists a 5% acceptance criterion for IC and ICP-AES calibration verification samples. The historical criterion for ICP-AES is 10%. Does the EPA intend to narrow the criterion for ICP-AES?

Answer #3: Yes, EPA intends to narrow the criterion for ICP-AES. Therefore, Table 7 is correct.

Question #4: Table 6 lists Chloride (Cl^-) as an analyte for CASTNet Teflon filter extracts, however Cl^- is not mentioned in Section 5.2 or the CASTNet QAPP. Does the EPA intend to extend the analytical parameter list to include Teflon filter Cl^- ?

Answer #4: Yes EPA intends to extend the analytical parameter to include Cl^- . As a result Sections 5.1 and 5.2 of the SOW are changed as follow:

The first sentence in Section 5.1 of the SOW has been revised to read as follows: "The Contractor shall analyze precipitation and natural water laboratory inter-comparison samples for anions (SO_4^{2-} , NO_3^- , and Cl^-), base cations (Na^+ , Ca^{2+} , K^+ , and Mg^{2+}), ammonium (NH_4^+), and pH using the methods specified in Table 5."

The first Sentence in Section 5.2 of the SOW has been revised to read as follows: "The Contractor shall analyze filter media for anions (SO_4^{2-} , NO_3^- , and Cl^-), base cations (Na^+ , Ca^{2+} , K^+ , and Mg^{2+}), and ammonium (NH_4^+)."

Question #5: Page 1-12 in the Statement of Work indicates: "All data entered by human data entry shall be validated either by independent double entry or

statistically defensible means to document a minimum of 99.99 percent data accuracy." Could EPA more completely define "human data entry"? Does it include the field observations made by site operators if hard copy forms are used? If so, use of independent double entry would require two site operators at each site to record the observations.

Answer #5: In an effort to more completely define "human data entry", EPA has revised the last sentence in the 2nd paragraph of Section 3.3.1 of the SOW to read as follows:

All **electronic** data entered by human data entry shall be validated either by ~~independent~~ double entry or statistically defensible means to document a minimum of 99.99 percent data accuracy. **All data transcribed from paper media to electronic media shall be validated either by independent double entry or statistically defensible means to document a minimum of 99.99 percent data accuracy.**

Question #6: In Section G, Contract Administration Data, there is no information on the formatted page G-13. Is there information missing?

Answer #6: No information is missing from page G-13. Page G-13 came as a result of a glitch in the conversion of the WordPerfect file into a ".pdf" file for posting in the RTP Procurement Operations Division Website.

Question #7: In Section L-17: is the estimated cost of capital equipment for the LOE portion only?

Answer #7: EPA inadvertently left out ODC/travel Estimates for the LOE Portion. The figures originally listed in the RFP apply to the completion portion. The following estimated amounts should be used for the LOE portion:

Travel

2 one day trips/2 persons - Clingman's Dome, TN

17 one day trips/1 person - destinations unknown (use Chicago, IL for cost estimate)

5 trips/2 persons/4 days - destinations unknown (use Chicago, IL for cost estimate)

Equipment - \$280,500 (escalated 3% each year)

Clause L-17 has been updated to reflect the above estimated amounts.

Question #8: In Section L-17, it is not clear how many meetings will be held annually. Please provide the total number of meetings and their annual frequency.

Answer #8: As indicated by the estimates shown in the base program completion portion in Clause L-17, offerors should estimate 8 one-day/one person trips for meetings (4 to east coast/4 to west coast).

Question #9: In Section L-17, During a recent audit from the DCMA government property administrator, offeror was advised the government make no distinction between capital equipment and non-capital equipment. The only distinction of

property is between equipment and material., what is the EPA specifying in its capital equipment allowance?

Answer #9: EPA does not considers materials in its capital equipment estimate.

Question #10: Attachment 9, Page 9-4 of 4, there is no page 4. Is this page indeed missing?

Answer #10: Page 9-4 of 4 is NOT missing. Like page G-13, this Page 9-4 of 4 also came as a result of a glitch in the conversion of the WordPerfect file into a ".pdf" file for posting in the RTP Procurement Operations Division Website.

Question #11: Will the EPA accept cost proposal on a Compact Disk using a Microsoft Excel spreadsheet?

Answer #11: Submission of cost proposal information in Compact Disk, in leu of a diskette, is acceptable. However, the RTP Procurement Operations Division uses Lotus 1,2,3 spreadsheet software. Therefore, in order to avoid potential software conversion issues, offeror are encouraged to submit the required cost proposal information in a format compatible with Lotus 1,2,3 spreadsheet software.

Question #12: The Statement of Work states that the Contractor shall "provide...agencies with access to CASTNet sites for the purpose of audits...Evaluation criterion # 6 states that each offeror shall describe...provisions to ensure the independence of quality assurance functions such as external audits..." Should the offeror assume that external audits are performed by agencies? Or should the offeror retain the services of a third party company or other organization to perform independent audits of CASTNet monitoring sites?

Answer #12: Offeror should assume that external audits will be performed by EPA or its authorized representatives. Clause M.3 of Section M has been revised to delete the words "such as external audits" from the evaluation factor #6.

Question #13: Is contractor's commercial offering for the Base Program to include estimated costs for acquisition of spare parts to replace existing spare parts in the Government Furnished Property to return the inventory of spare parts at the end of the contract period to the same level as the inventory at the start of the contract?

Answer #13: Yes

Question #14: What quantities of the following items will be made available to the contractor for the Base Program:

- a. Complete filter pack assemblies (i.e., excluding expendable sample media);
- b. Re-usable shipping cases for the filter packs; and
- c. Spare components for the filter packs (e.g., annular denuders, filter housings, etc.).

Answer #14: The filter pack assemblies ,filter packs and even denuders are treated as "semi-consumables" in the equipment tracking database. Therefore, they have never been entered into the government-furnished database because of the transient or breakable nature of this equipment. However, the cost is not insignificant.: we have about 120 denuders @ \$150 ea.. (\$18K), and 400 filter pack assemblies @ \$100 ea. (\$40k) that is government equipment and would be delivered by the existing contractor.

Question #15: In the Statement of Work, Section 3.2.6 ("Filter Pack Sampling") the text states that filter pack flow shall be maintained with mass flow controllers at standard conditions of 25 Deg. C and 769 mmHg. Should the referenced pressure value read 760 mmHg in this section?

Answer #15: Yes, Section 3.2.6 of the SOW has been revised to read : "Filter pack flow shall be maintained with mass flow controllers at standard conditions of 25oC and **760** mm mercury."

Question #16: For cost purposes, we would appreciate any information that could be provided to characterize and describe any special conditions or restrictions pertaining to operators and other project personnel accessing the EPA operated CASTNet sites. Examples of such special conditions or restrictions might include:

Accessing site would likely require a 4WD vehicle during some seasons or weather conditions;

Accessing site requires traversing terrain on foot for a significant distance (e.g., > 50m);

Accessing site requires obtaining advance security clearance;

Site access is restricted to certain hours or days.

Answer #16: Because the majority of CASTNET sites are in rural and remote areas, the offeror should assume that access to sites is similar to that of any residence in the area and that 4WD may be required during inclement weather or conditions. The sole exception is LYE145 which normally requires hiking or skiing to access. Offerors may reference an Access database that provides specific directions and notes about access to each site at http://www.epa.gov/castnet/library/site_directions.mdb.

Question #17: In the Excel spreadsheet file that lists the GFP monitoring equipment by CASTNet site location, we noticed a number of site designations that are not listed in Table 1 of the SOW. Furthermore, the equipment listed as being at these site locations gives the impression that this is "spare" equipment, and that these sites are used for storage. Is this correct and, if so, can the geographic location of these equipment storage sites be provided? (The referenced site designations are as follows: ARS947; CLD303; CRU703; EPA881; EPA882; EPA883; EPA885; EPA886; EPA887; GTB707; HAZ998; HGB705; LIV573; MIC920; OFF987; PAD980; POR708; PSN706; REP930; SIK570; & SRB997.)

Answer #17: Offerors should assume that all spare equipment is stored at the contractor's facility. Site codes other than those in Table 1 of the SOW designate either equipment stored at the contractor's facility, collocated equipment for special studies or equipment that is on loan to other organizations at EPA's request.

Question #18: Page 1-3 of the SOW states that "up to" 100 filter pack samples should be analyzed by the laboratory during the transition period. What is the expected (average) number of samples not the maximum number EPA expects to require being analyzed. This information is especially important because it is a cost that the incumbent contractor will not be subject to.

Answer #18: The offeror should assume that 100 filter pack samples will be analyzed during the transition period.

Question #19: It appears that all of the equipment required for the performance checks and for the annual performance audits of each site is part of the Government Furnished Property. Is this assumption correct?

Answer #19: Current GFP lists include all equipment required for the semi-annual performance checks and the annual performance audits. However, under the resulting contract, the contractor will only receive as GFP that equipment that is needed to perform the semi-annual performance checks. Because the contractor will not be performing the annual independent performance audits under the resulting contract, the equipment necessary for the annual performance audits will NOT be provided as GFP. The GFP lists will be updated to reflect this change prior to contract award.

Question #20: Page 1-10 Section 3.3 of the SOW states that:

"The database management system that the Contractor uses shall be capable of:

Providing data security in compliance with EPA requirements for external data systems;"

Section 3.3.4 Data Security and Disaster Recover of the SOW states that Contractor shall provide for data security and deliver a detailed disaster recovery plan to the PO within 90 days of contract award.

Please provide information on where we can access the EPA data security requirements for external data systems.

Answer #20: Information Resources Management (IRM) Policy, Standards, Guidance & Planning Documents are located at <http://www.epa.gov/irmpoli8/>. In addition NIST provides a planning guide for preparing security plans at <http://csrc.nist.gov/publications/nistpubs/800-18/Planguide.PDF>

Question #21: Section 3.3 of the SOW, Data Information Management and Analysis, references two software products to be used in the contract for database management and data transfer to EPA: 1) Oracle SQL*Net, and 2) SecuRemote. Will EPA provide the Contractor the licenses for use of these software products or will the contractor be required to purchase these licenses? Should the annual software maintenance costs offered by the supplier of these software products be costs incurred by the Contractor or will EPA be covering these software maintenance costs outside of this contract?

Answer#21: The SOW does not require the use of these software products. However, if the offeror proposes to electronically transfer data directly to EPA's databases, these software products are required by EPA's Office of Environmental Information to access EPA's servers (see <http://www.epa.gov/webguide/started/getserv.html>). The Contractor shall be responsible for obtaining all software licenses it deems necessary to meet the Government's requirements.

Question #22: What number of direct labor hours or percentage of direct labor hours for Data, Information and Analysis in Section 3.3 of the SOW will be required for new data analysis requests not currently being conducted? Should the cost of these hours for new data analysis requests be included in the Base Program or will they be treated as a separate work assignment in the Level of Effort portion of the contract?

Answer #22: The offeror should assume "ad hoc" data requests and simple analyses beyond those currently being conducted shall not exceed 100 hours per year for the base program. Complex analyses shall be accomplished through the use of the LOE portion of the contract.

Question #23: The cost of uploading data to EPA's Oracle database depends on the quantity of data transmitted. How many gigabytes of data are expected to be uploaded per month on average?

Answer #23: On average, approximately 50 megabytes in uncompressed ASCII files are currently delivered to EPA each month.

Question #24: Section 3.3 of the Statement of Work second paragraph on Page 1-11 states that EPA will provide a complete and functional export of EPA's Oracle schema. Does this mean that EPA will provide the complete detailed procedure for uploading data from the SQL database to EPA's Oracle data base management system (DBMS)? Does this schema and current practice consist of sending text files in a designated EPA specified format to the EPA Oracle DBMS?

Answer #24: The EPA's Oracle schema shall be provided as a standard Oracle EXP export, and includes data and data objects such tables, columns, indexes, constraints and stored procedures. In the existing contract, data files are delivered in industry standard, coma-delimited ASCII format and are loaded using Oracle's UTLFILE.

Question #25: Section 3.3 of the Statement of Work second paragraph on Page 1-11 states that EPA will provide the "Visual Basic data management application". Does this mean that EPA will provide the complete set of Visual Basic software now used by the current contractor to conduct auto polling, processing, validating and archiving of monitoring data and all related data in the SQL database as well as the Visual Basic software used to import data from other government agencies and to format data for export to the EPA Oracle DBMS?

Answer #25: EPA will provide the source code for the existing Visual Basic data management application but does not include any software licenses. Procedures are included that conduct auto polling, processing, validating and archiving and exporting of monitoring data and are functional on the current contractor's computer architecture, equipment and configurations.

Question #26: Under the Cost Plus Fixed Fee Completion Base Program, does EPA expect the successful contractor to develop any new Visual Basic software and, if so, what specific functions is this new software expected to carry out?

Answer #26: EPA expects the successful contractor to process and manage project data in an efficient and accurate manner. EPA does not require or endorse any software product in this SOW. In order to accomplish the goals of the program, the offeror should expect to develop software necessary to

respond to changing data needs of the deposition community and to update and enhance algorithms and procedures to reflect scientific and computational advances in the subject area. Development of completely new data products with new requirements will be accomplished through Level of Effort work assignments.